

Breeding on site

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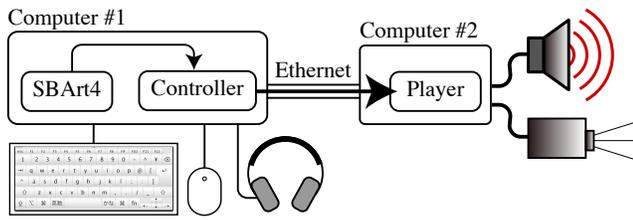


Figure 1: System setup.

This is a live-performance of improvisational productions and playbacks of a type of evolutionary art using a breeding tool, SBArt4 version 3 (Unemi 2010). The performer breeds a variety of individual animations using SBArt4 on a machine at his front in a manner of interactive evolutionary computation, and sends the genotype of his/her favorite individual to SBArt4Player through a network connection. Figure 1 is a schematic illustration of the system setups. Each individual animation that reached the remote machine is played back repeatedly with the synchronized sound effect until another one arrives. Assisted by a mechanism of automated evolution based on computational aesthetic measures as the fitness function, it is relatively easy to produce interesting animations and sound effects efficiently on site (Unemi 2011).

The player component has a functionality to composite another animation of feathery particles that reacts against the original image rendered by a genotype. Each particle moves guided by the force calculated from the HSB color value under the particle. The brightness is mapped to the strength, the hue value is mapped to the orientation, and the saturation is mapped to the fluctuation. This additional effects provide another impression for viewers.

The performance will start from a simple pattern selected from the initial population randomly generated, and then gradually shifts to complex patterns. The parameters of sound synthesis are fundamentally determined from statistic features of frame image so that it fits with the impression of visuals, but some of them are also subjects of real-time tuning. The performer is allowed to adjust several parameters such as scale, tempo, rhythm, noise, and the other modulation parameters (Unemi 2012) following his/her preference.

Because the breeding process includes spontaneous trans-



Figure 2: Live performance in Rome, December 2011.

formation by mutation and combination, the animations shown in a performance are always different from those in another occasion. This means each performance is just one time.

References

- Unemi, T. 2010. Sbart4 - breeding abstract animations in realtime. In *Proceedings of the IEEE World Congress on Computational Intelligence*, 4004–4009.
- Unemi, T. 2011. Sbart4 as automatic art and live performance tool. In Soddu, C., ed., *Proceedings of the 14th Generative Art Conference*, 436–447.
- Unemi, T. 2012. Synthesis of sound effects for generative animation. In Soddu, C., ed., *Proceedings of the 15th Generative Art Conference*, 364–376.

The projects website is:

<http://www.intlab.soka.ac.jp/~unemi/sbart/4/breedingOnSite.html>

Demo video:

<http://www.youtube.com/watch?v=1kKpWntUd8M>